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RESEARCH PAPER

Growth and yield of ashwagandha (*Withania somnifera* L.) as effected by INM and *Panchagavya*

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Abstract **:** Investigations were carried out for two years to study the effect of different levels of NPK (0, 50, 100 and 150%), organic manures (castor cake @ 2.5 t ha^{-1} and vermi-compost @ 1 t ha^{-1}), *panchagavya* and bio fertilizers (*Azospirillum* and phosphorus solubilising bacteria each of 5 kg ha^{-1}) on growth and root yield of medicinal crop Ashwagandha at College Farm, College of Agriculture, Hyderabad during *Rabi* 2007-08 and *Kharif* 2008 by using split plot design. During both the years at flowering and harvest, the highest dry matter production (3314 and 3083 kg ha^{-1} and 6204 and 5101 kg ha^{-1}) and dry root yield (127 and 125 kg ha^{-1} and 348 and 333 kg ha^{-1}, respectively) was recorded with conjunctive use of 150 per cent NPK with castor cake @ 2.5 t ha^{-1}.

Key Words **:** Ashwagandha, Castor cake,Vermi-compost, *Panchagavya, Azospirillum*, Phosphorus solubilising bacteria, Root yield, Dry matter production

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INTRODUCTION

Ashwagandha is one of the most important medicinal plant. It is coined with two words *viz*., Ashwini and Gandha. Ashwini means horse and Gandha means power. It belongs to the family of Solanaceae, cultivated in different states of India. Most commonly its roots and occasionally leaf and seed are used in Ayurvedic and Unani medicines. It has significant value in the pharmacological activity due to the presence of alkaloids in roots. Roots contain several pyrazole alkaloids namely withasomnine and steroldal, withaferin A and withanolides (Dastur, 1970). Now a days use of Ayurvedic medicines is increasing due to less side effects. There is good demond to root of ashwagandha. There is necessity to increase the production by supplying adequate amount of fertilizers and organic manures. In general, research on nutritional requirement of medicinal plants is very scanty. Ashwagandha crop gives very good response to application of organic manures (Rajeshwar Rao and Rajput, 2005). The present investigation was carried out to study the effect of inorganic fertilizers, different organic manures, bio-fertilizers and *panchagavya* on performance of ashwagandha in terms of dry matter production and root yield.

MATERIALS AND METHODS

The field experiments was conducted to study the effect of different organic manures, *panchagavya* and bio-fertilizers in combination with different levels of NPK at College farm, College of Agriculture, Rajendranagar, Hyderabad. It is located at Latitude of $17^0 19^I 39^{II}$ N and Longitude of $78^0 24^I 09^{II}$ E and at an altitude of 568.3 m above mean sea level. The crop was grown during *Rabi* 2007 – 2008 and *Kharif* 2008. The initial soil properties of experimental site during both the years are presented in Table A. The field experiment was laid out with split plot design having four main treatments M_1 - Control (no fertilizers), M_2 - 50 per cent NPK (30-25-20 kg ha^{-1}), M_3 - 100 per cent NPK (60-50-40 kg ha^{-1}) and M_4 - 150 per cent NPK (90-75-60 kg ha^{-1})) and four sub treatments S_1 - No manures + Bio-Fertilizers (BF) (*Azospirillum* +PSB), S_2 - Castor cake @ 2.5 t

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